

Serial No. 09/735,260

Docket No. PARI-101

IN THE CLAIMS

CLAIM 1. (Previously Presented) A method for radiating thermal energy from a terrestrial position into deep space comprising:

arranging a thermal energy transmitting material over an object not in direct sunlight, said thermal energy transmitting material configured and removably positioned to remove waste heat proximate and external said object via at least one of conduction and convection thermal energy transfer thereby reducing thermal pollution from a terrestrial position into deep space; and,

positioning said thermal energy transmitting material so that a transmitting surface thereof faces deep space such that fluid communication therebetween consists of deep space and the transmitting surface, said material having spectral surface properties of high emissivity in a spectral band substantially transparent to the atmosphere of the earth, wherein said object includes objects on the surface of the earth and proximate thereto and waste heat and thermal pollution includes thermal energy other than solar energy.

CLAIM 2. (Previously Presented) The method of Claim 1 wherein said object is covered with the transmitting material while being shaded from direct sunlight and only at intervals during which the object is not in direct sunlight.

CLAIM 3. (Original) The method of Claim 1 wherein said material has a normal spectral emissivity ranging from about 0.8 to about 1.0.

CLAIM 4. (Original) The method of Claim 1 wherein said material has a low absorptivity in all spectral bands.

CLAIM 5. (Original) The method of Claim 4 wherein said material has an absorptivity ranging from about 0.3 to about 0.0.

CLAIM 6. (Original) The method of Claim 1 wherein the spectral band is selected from the

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group consisting of about 8 μ m to about 13 μ m, about 3 μ m to about 4 μ m, and about 0.7 μ m to about 2.7 μ m.

CLAIM 7. (Original) The method of Claim 3 wherein the material comprises a suspension of a spectral substance in a polymeric base.

CLAIM 8. (Original) The method of Claim 7 wherein the spectral substance is selected from the group consisting of carbon black acetylene soot, camphor soot, zinc sulfide, silver chloride, potassium chloride, and zinc selenide.

CLAIM 9. (Original) The method of Claim 5 wherein the material comprises a coating that reflects incoming thermal infrared electromagnetic energy.

CLAIM 10. (Previously Presented) A device for transmitting thermal energy from an object into deep space comprising:

a thermal energy transmitting material designed to cover an object not in direct sunlight and positioned with a transmitting surface thereof facing deep space such that fluid communication therebetween consists of deep space and the transmitting surface, said thermal energy transmitting material configured and removably positioned to remove waste heat proximate and external said object via at least one of conduction and convection thermal energy transfer thereby reducing thermal pollution from a terrestrial position into deep space, said transmitting material having spectral surface properties of high emissivity in a spectral band substantially transparent to the atmosphere of the earth, wherein said object includes objects on the surface of the earth and proximate thereto and waste heat and thermal pollution includes thermal energy other than solar energy.

CLAIM 11. (Original) The device of Claim 10 wherein said material has a normal spectral emissivity ranging from about 0.8 to about 1.0.

CLAIM 12. (Original) The device of Claim 10 wherein said material has a low absorptivity in all spectral bands.

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CLAIM 13. (Original) The device of Claim 12 wherein said material has an absorptivity ranging from about 0.3 to about 0.0.

CLAIM 14. (Original) The method of Claim 10 wherein the spectral band is selected from the group consisting of about 8 μ m to about 13 μ m, about 3 μ m to about 4 μ m, and about 0.7 μ m to about 2.7 μ m.

CLAIM 15. (Original) The device of Claim 10 wherein the thermal energy transmitting material is disposed within a pressure cell having a pressure less than ambient pressure.

CLAIM 16. (Original) The device of Claim 11 wherein the material comprises a suspension of a spectral substance in a polymeric base.

CLAIM 17. (Original) The device of Claim 16 wherein the spectral substance is selected from the group consisting of carbon black acetylene soot, camphor soot, zinc sulfide, silver chloride, potassium chloride, and zinc selenide.

CLAIM 18. (Original) The device of Claim 13 wherein the material comprises a coating that reflects incoming thermal infrared electromagnetic energy.

CLAIM 19. (Previously Presented) An electricity generating device for use in an environment having an ambient pressure, comprising:

- a first junction surface in thermal contact with one of deep space and solar energy, said first surface having a high thermal emissivity toward the atmosphere of the earth;

- a second junction surface in thermal contact with an object located at about a surface of the earth or proximate thereto; and

- an electricity generating cell intermediate the first and second junction surfaces;

- wherein the first and second junction surfaces are at a temperature different from each other producing a thermoelectric potential between the first and second junction surfaces.

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CLAIM 20. (Previously Presented) The electricity generating device as set forth in claim 19, wherein the electricity generating cell has a thermal resistivity and further includes;

a first semiconductor material disposed between the first junction surface and the second junction surface, the first semiconductor material has a geometry which increases said thermal resistivity as compared to a second electricity generating cell having a first semiconductor material having a straight geometry which spans a substantially equivalent distance.

CLAIM 21. (Original) An electricity generating device as set forth in claim 20, wherein said geometry is curved, coiled, snaking, or a combination thereof.

CLAIM 22. (Original) The device of Claim 10 wherein said thermal energy transmitting material is positioned in thermal contact with a heat transfer surface.

CLAIM 23. (Previously Presented) The device of Claim 22 wherein the heat transfer surface and at least a portion of the thermal energy transmitting material are disposed within a pressure cell having a pressure less than ambient pressure.

CLAIM 24. (Previously Presented) The method of claim 1, wherein said object is located between about an altitude of flying aircraft and about the surface of the earth.

CLAIM 25. (Previously Presented) The method of claim 10, wherein said object is located between about an altitude of flying aircraft and about the surface of the earth.

CLAIM 26. (Previously Presented) The method of claim 24, wherein said object is located between an altitude of about 60,000 feet from the surface of the earth and about the surface of the earth.

CLAIM 27 (Previously Presented) The method of claim 25, wherein said object is located between an altitude of about 60,000 feet from the surface of the earth and about the surface of the earth.